First Nations Cancer Research and Surveillance Workshop

Ottawa, Ontario

September 23-24, 2003

Supported by:

Canadian Institutes of Health Research
Cancer Care Ontario
Canadian Institute for Health Information
Health Canada
National Cancer Institute of Canada
National Aboriginal Health Organization

Cancer in Ontario First Nations

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Information about cancer burden in Canadian FN

Generally from studies:

- of small populations
- of cancer mortality rather than incidence
- with no data on outcomes (e.g., survival)
- which were not current
- which could not identify changes over time
- having various methodological problems

Why a study in Ontario?

- Joint Ontario Aboriginal Cancer Committee (1996) needed surveillance data:
  - is there a need for action?
  - if so, what are the priority areas?
- Led to formation of Aboriginal Cancer Care Unit at Cancer Care Ontario (2001)
- ACCU and JOACC supported ongoing surveillance

Aboriginals in Ontario

- 159,000 registered under Indian Act (2002)
  - First Nations people
  - largest provincial population of FN
  - 126 bands
  - 50% live off-reserve, mostly in urban centres
- about 50,000 Métis and non-registered Indians

Purpose of Ontario Study

- To produce comprehensive, high quality data on the burden of cancer in Ontario FN, both currently and over time
  - cancer incidence (and mortality)
  - survival after cancer
- To compare the burden in Ontario FN with that in the general Ontario population

Data and Methods

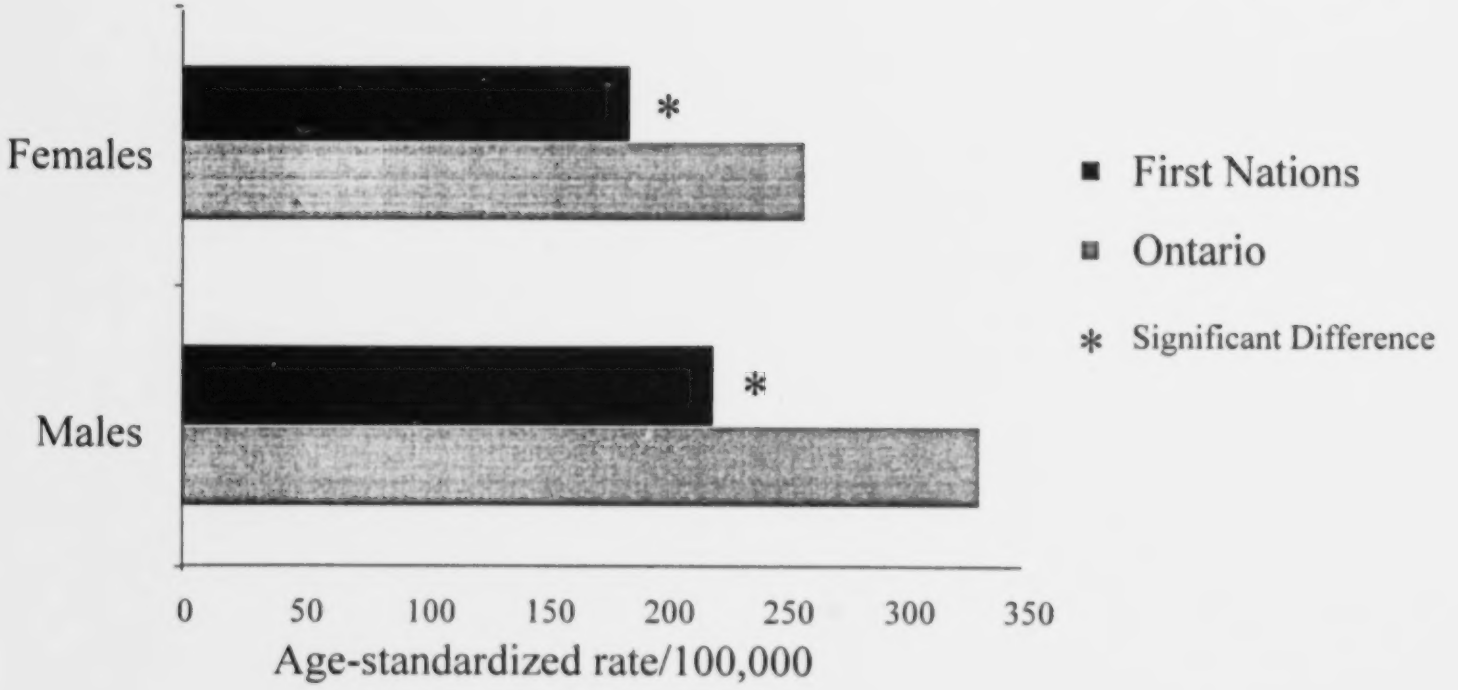
Computerized record linkage of Ontario:

- FN lists,1968-91
  - Indian and Northern Affairs Canada
- cancer registry files, 1968-2001
  - Ontario Cancer Registry, 1968-2001
  - Ontario residents in Manitoba CR, 1968-1991
- all cause mortality files, 1968-2001
  - Ontario vital statistics

Results:
Cancer incidence
1992-2001

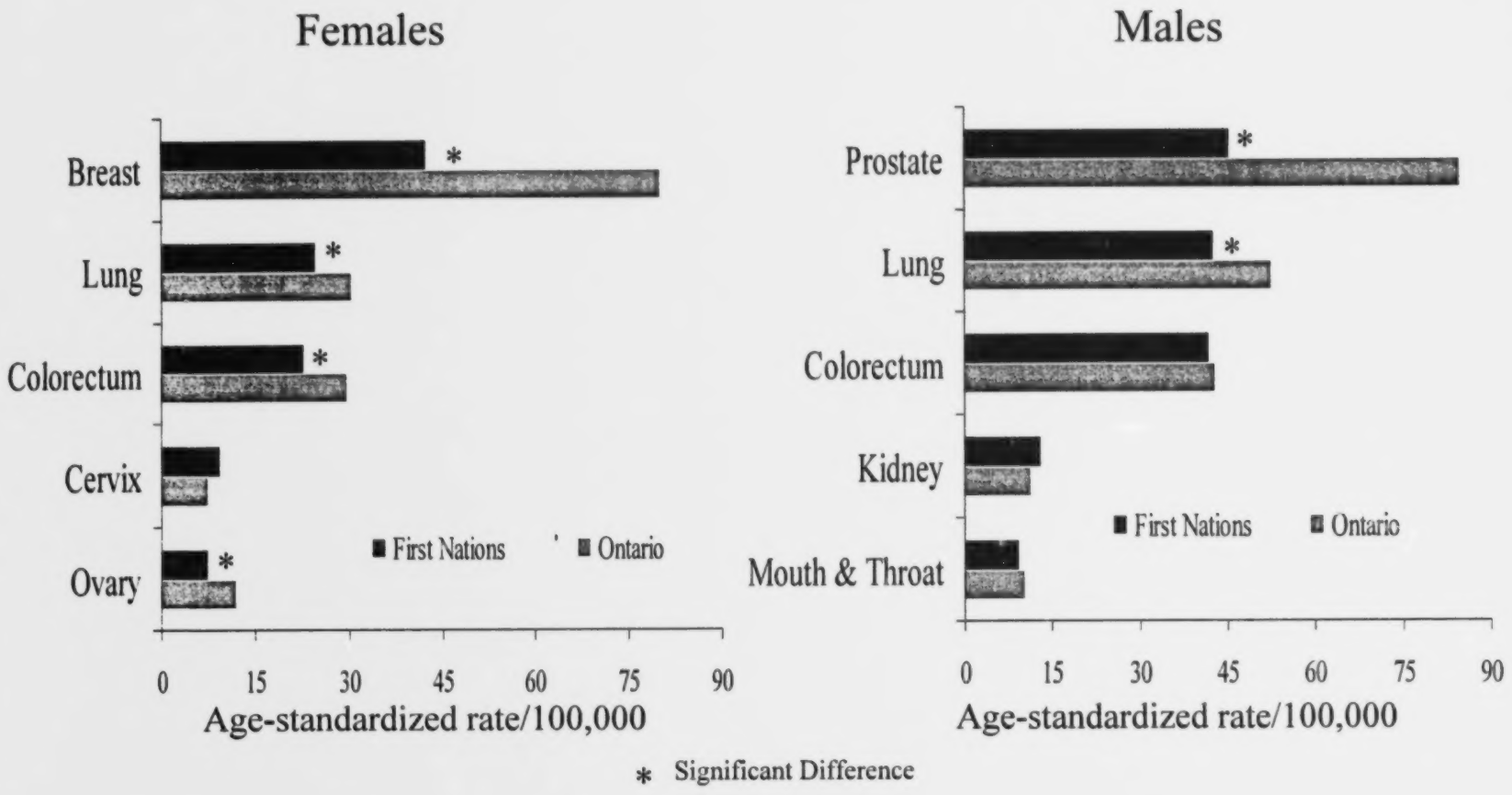
Note: All rates are standardized to the World population

Cancer incidence in Ontario FN, 1992-2001: All cancers



Rates age-standardized to the World population

Cancer incidence in Ontario FN, 1992-2001, by cancer type



Summary of incidence, 1992-2001

- 2,365 cancers diagnosed in FN in 1992-2001
- Ranking of top cancers same for FN and Ontario:

Females:	Males:
1. Breast	1. Prostate
2. Lung	2. Lung
3. Colorectal	3. Colorectal

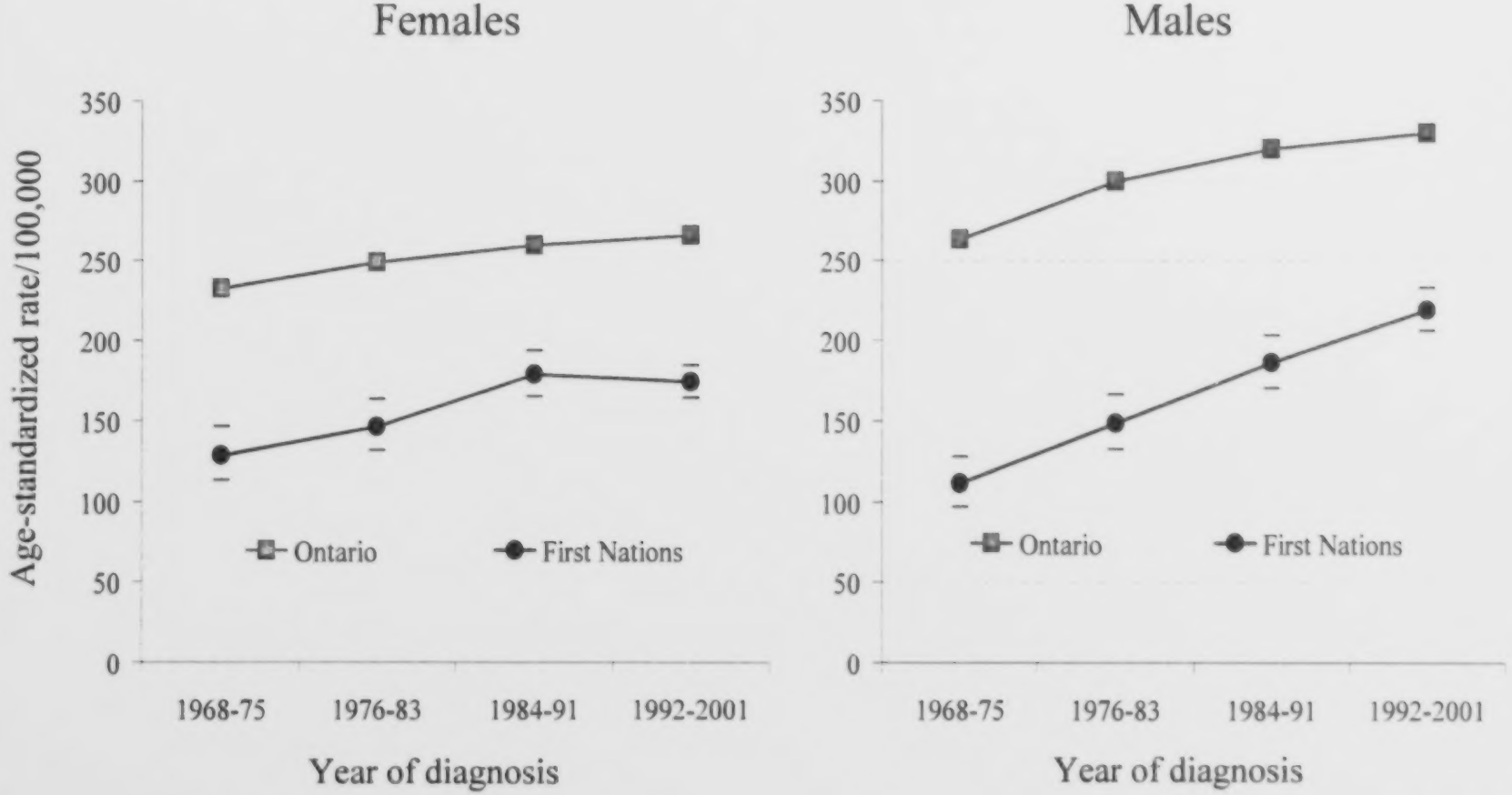
- These 3 account for >50% of cancer in both populations

Summary of incidence, 1992-2001

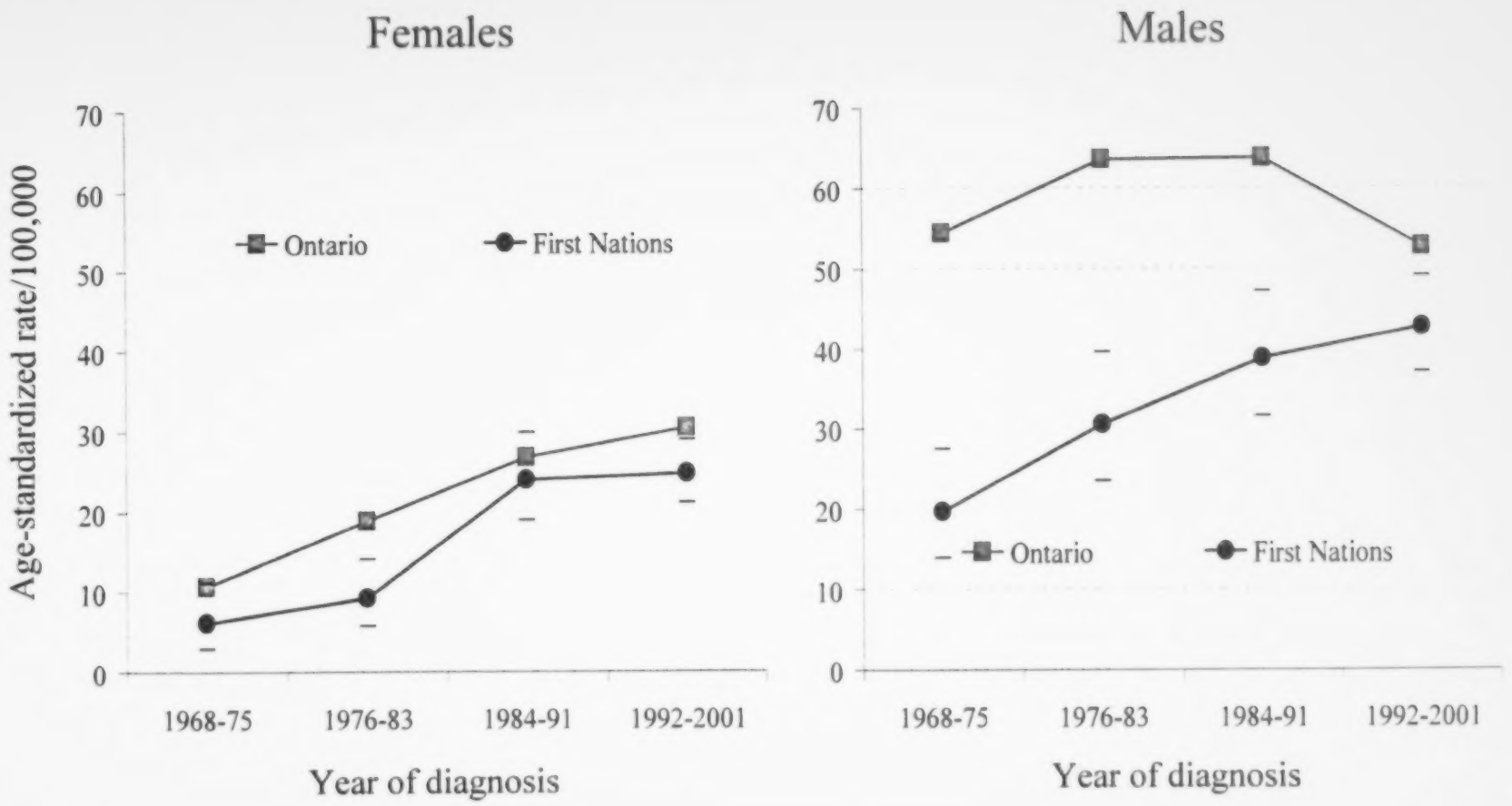
- FN significantly lower than Ontario for:
  - all cancers combined
  - breast, prostate and lung cancers
  - colorectal cancer in women only
  - most other types of cancer (exceptions below)
- FN similar for:
  - kidney, mouth and throat and stomach cancer
  - colorectal cancer in men
- FN higher than Ontario for:
  - gallbladder cancer (significant only in women)
  - cervical cancer (not significant)

Cancer incidence trends 1968-2001

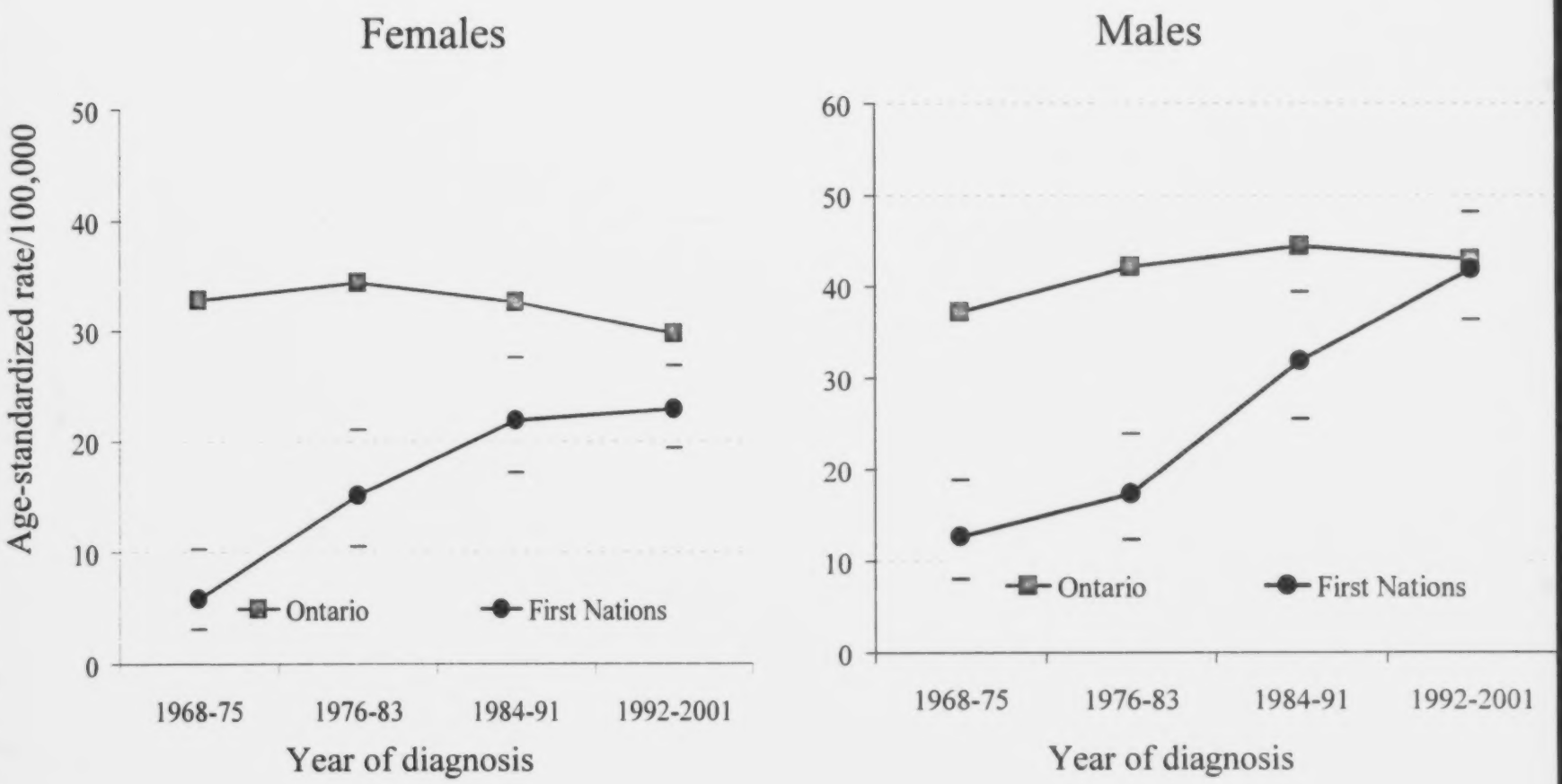
All cancers trends in Ontario FN, 1968-2001



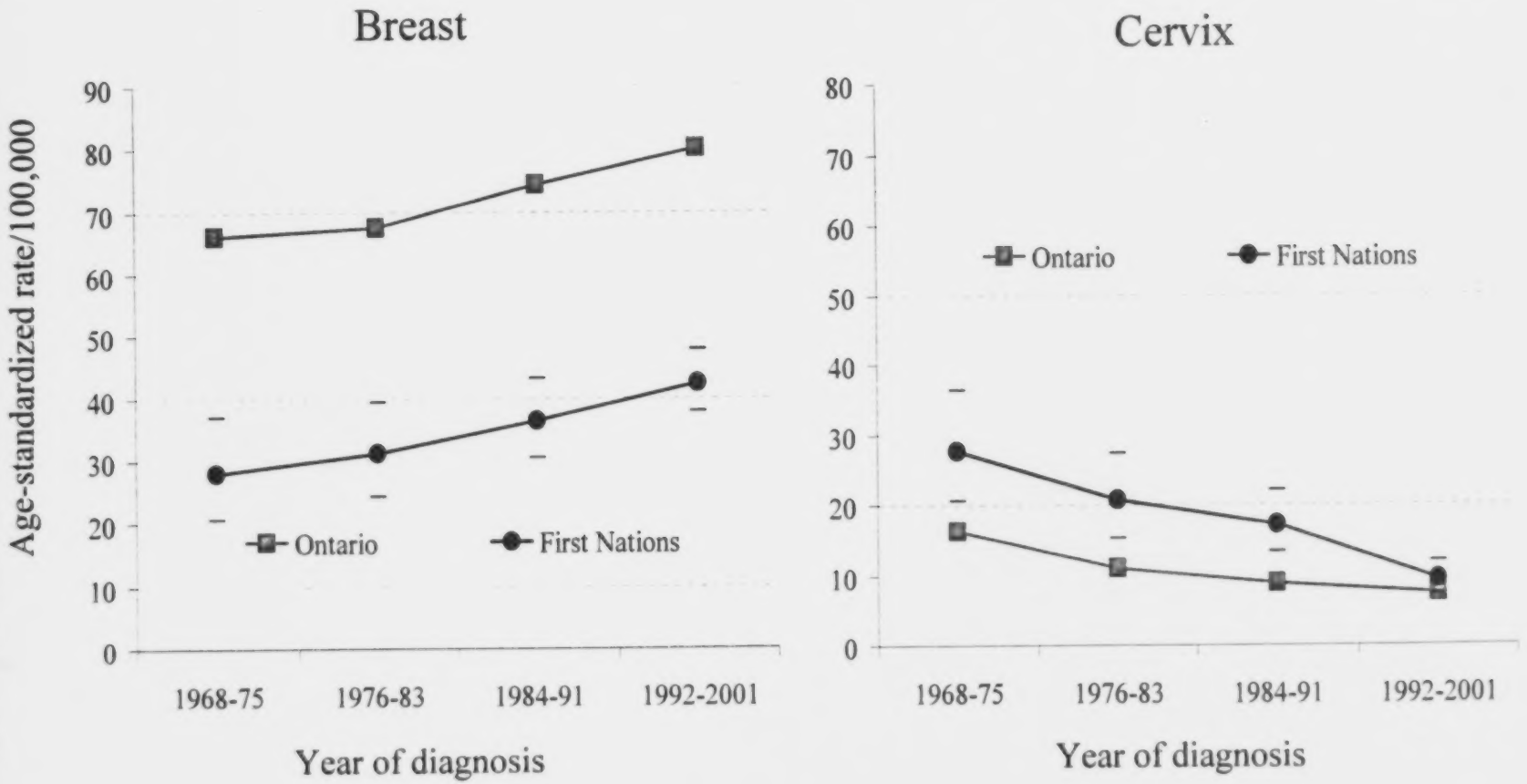
Lung cancer trends in Ontario FN, 1968-2001



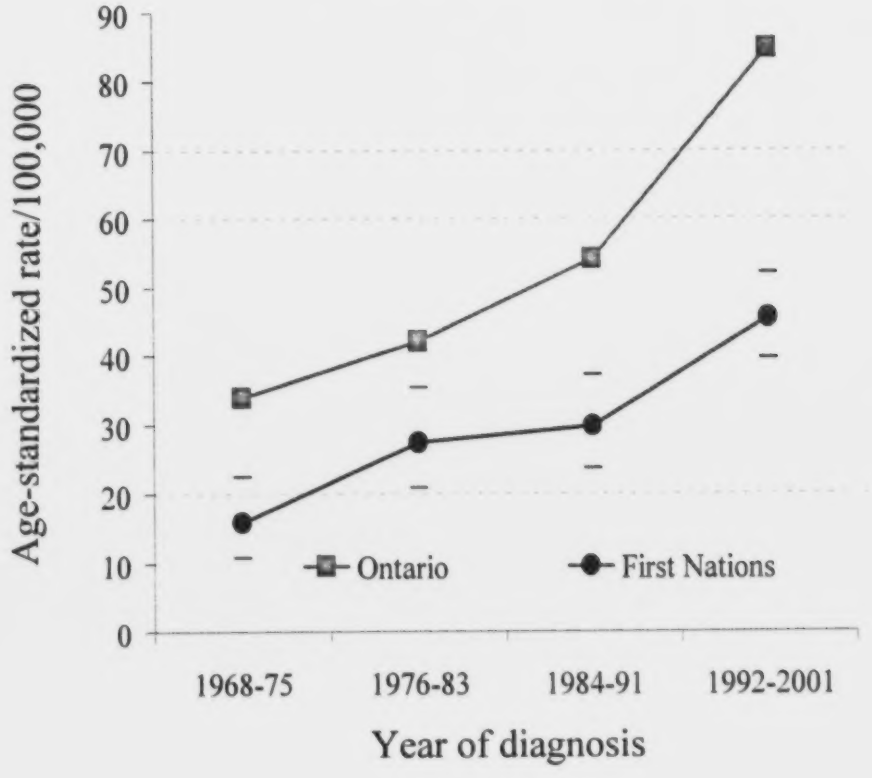
Colorectal cancer trends in Ontario FN, 1968-2001



Breast & cervix cancer trends, Ontario FN 1968-2001



Prostate cancer trends in Ontario FN, 1968-2001



Summary of trends, 1968-2001

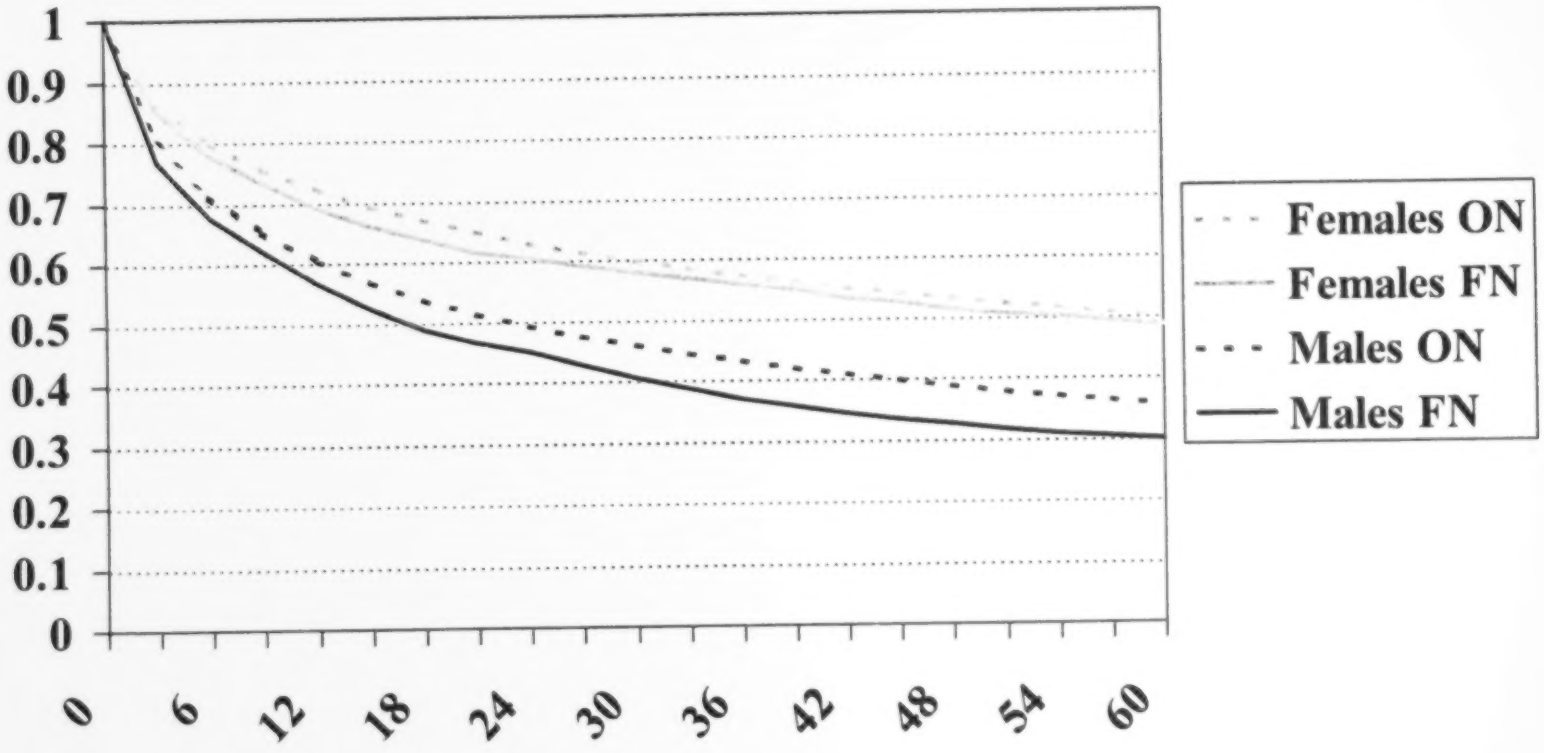
- FN rates increasing for all cancers combined and 4 most common cancers
  - approaching Ontario rates for colorectal and lung cancers
- FN rates declining for cervix cancer
  - approaching Ontario rate

Survival following cancer

Methods

- 1980-91 diagnoses
- Followed for death to 2000
- Excluded
  - second & subsequent primary cancers
  - cancers notified only by death certificate
- Censored at earlier of: age 100, 10 years of follow-up *or* December 31, 2000
- Cox proportional hazards modelling
  - adjusted for age at diagnosis

% survival, all cancers, by months since diagnosis*



* Diagnosed 1966-1991, followed through 2000

10 -year survival: hazard ratios†, FN vs. Ontario

	Males	Females
All cancers	1.27 *	NPH
Colorectum	1.05	1.13
Lung	1.05	1.05
Breast		1.25 *
Cervix		1.01
Prostate	1.37 *	

† From Cox proportional hazards models. Adjusted for age at diagnosis.

* $p < 0.05$

NPH = non-proportional hazards

Summary of survival results

Men

- significantly worse survival for all cancers and for prostate cancer
- slightly worse (non-significant) survival for lung and colorectal cancers

Women

- cannot estimate survival for all cancers
- significantly worse survival for breast cancer
- slightly worse survival for other cancers

Survival in Saskatchewan (Alvi 1999)

- Breast (diagnosed 1970-95)
  - northern FN worse age-adjusted survival than southern non-FN even adjusted for stage
- Cervix (diagnosed 1980-95)
  - survival adjusted for age and stage similar
- Colorectal (diagnosed 1990-95)
  - survival adjusted for age and stage similar
- FN and northern populations had more late stage than southern non-FN

Survival in Native Americans

- Worse survival for all cancers combined and major cancers, compared to non-Hispanic whites
- Some differences in stage and treatment-for-stage distributions
- Survival differences persisted after adjustment for age, stage and treatment

Sources: Gilliland et al., 1998; Sugarman et al., 1994; Dennis, 2000

Conclusions

How are the data being used?

- To assist CCO's Aboriginal Cancer Care Unit in identifying needs and priorities, current and future
- To help assess success of future cancer reduction strategies
- To identify areas requiring research

These uses require *ongoing* information on cancer burden

Acknowledgements

Work supported by:

Ontario Ministry of Health
Health Canada
Cancer Care Ontario
Joint Ontario Aboriginal Cancer Committee
Canadian Population Health Initiative